

FORM PTO-1390 (Modified)  
(REV 10-95)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371

195910US0PCT

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09 / 622 044 ✓

INTERNATIONAL APPLICATION NO.  
PCT/FR99/00395 ✓INTERNATIONAL FILING DATE  
22 FEBRUARY 1999 ✓PRIORITY DATE CLAIMED  
23 FEBRUARY 1998 ✓

TITLE OF INVENTION

ANTI-LACERATION GLAZING ✓

APPLICANT(S) FOR DO/EO/US

Frederic BORDEAUX, et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
  - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☒ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ A copy of the International Search Report (PCT/ISA/210).
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☒ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☐ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

## Items 13 to 18 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☐ A **FIRST** preliminary amendment.  
A **SECOND** or **SUBSEQUENT** preliminary amendment.
16. ☐ A substitute specification.
17. ☐ A change of power of attorney and/or address letter.
18. ☐ Certificate of Mailing by Express Mail
19. ☒ Other items or information:

Request for Consideration of Documents Cited in International Search Report

Notice of Priority

PCT/IB/308

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.53) <b>09/622044</b>		INTERNATIONAL APPLICATION NO. PCT/FR99/00395		ATTORNEY'S DOCKET NUMBER 195910US0PCT	
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20. The following fees are submitted:

**BASIC NATIONAL FEE ( 37 CFR 1.492 (a) (1) - (5)) :**

<input checked="" type="checkbox"/> Search Report has been prepared by the EPO or JPO .....	\$840.00
<input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) .....	\$670.00
<input type="checkbox"/> No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) .....	\$760.00
<input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO .....	\$970.00
<input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) .....	\$96.00

**ENTER APPROPRIATE BASIC FEE AMOUNT =**

	<b>\$840.00</b>	
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Surcharge of **\$130.00** for furnishing the oath or declaration later than ☐ 20 ☒ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

	<b>\$130.00</b>	
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CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	- 20 =	0	x \$18.00	<b>\$0.00</b>	
Independent claims	- 3 =	0	x \$78.00	<b>\$0.00</b>	
Multiple Dependent Claims (check if applicable). <input type="checkbox"/>				<b>\$0.00</b>	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				<b>\$970.00</b>	
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). <input type="checkbox"/>				<b>\$0.00</b>	
<b>SUBTOTAL =</b>				<b>\$970.00</b>	
Processing fee of <b>\$130.00</b> for furnishing the English translation later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).				<b>\$130.00</b>	
<b>TOTAL NATIONAL FEE =</b>				<b>\$1,100.00</b>	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input type="checkbox"/>				<b>\$0.00</b>	
<b>TOTAL FEES ENCLOSED =</b>				<b>\$1,100.00</b>	
				<b>Amount to be refunded</b>	\$
				<b>charged</b>	\$

☒ A check in the amount of **\$1,100.00** to cover the above fees is enclosed.

☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \_\_\_\_\_ to cover the above fees.  
A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **15-0030** A duplicate copy of this sheet is enclosed.

**NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.**

SEND ALL CORRESPONDENCE TO:

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NAME

**24,618**

REGISTRATION NUMBER

*Aug. 23 2000*

DATE

09/622044

195910US0PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :  
FREDERIC BORDEAUX ET AL : ATTN: APPLICATION DIVISION  
SERIAL NO: 09/622,044 :  
FILED: AUGUST 23, 2000 :  
FOR: ANTI-LACERATION GLAZING

PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231

SIR:

Prior to examination on the merits, please amend the above-identified application as follows:

IN THE CLAIMS

Please cancel Claims 1-11 and replace therefor the following claims:

--12. A method of making a anti-laceration glazing comprising adhering two sheets of glass with an intercalary adhesive layer, wherein said intercalary adhesive layer has a thickness of more than 0.76 mm.

13. The method of Claim 12, wherein said anti-laceration glazing has anti-laceration properties in the non-intact state.

14. The method of Claim 12, wherein said anti-laceration glazing has anti-laceration properties in the non-intact bent state.

15. The method of Claim 12, wherein said intercalary adhesive layer has a thickness of not more than 2 mm.

16. The method of Claim 15, wherein said intercalary adhesive layer has a thickness of not more than 1.90 mm.

17. The method of Claim 15, wherein said intercalary adhesive layer has a thickness of not more than 1.53 mm.

18. The method of Claim 12, wherein said intercalary adhesive layer is composed of one or more layers of plastic, wherein said plastic is selected from the group consisting of polyvinylbutyral, polyurethane, RIM polyurethane, polycarbonate, poly(methyl methacrylate), polypropylene, ethylene-vinyl acetate copolymer, cycloolefinic copolymer, polyethylene, thermoplastic polyester, unsaturated heat-hardening polyester, acrylic resin, and vinyl chloride-glycidyl methacrylate copolymer.

19. The method of Claim 18, wherein said polyurethane is a thermoplastic polyurethane.

20. The method of Claim 18, wherein said polyethylene is in the form of an ionomer resin.

21. The method of Claim 20, wherein said ionomer resin is a (meth)acrylic acid and ethylene copolymer.

22. The method of Claim 18, wherein said thermoplastic polyester is a poly(ethylene terephthalate).

23. The method of Claim 12, wherein each of said two sheets of glass has a thickness of from 0.1 to 3 mm, and has a core compressive stress in the central zone ranging from 1 to 50 MPa.

24. The method of Claim 23, wherein each of said two sheets of glass has a thickness of from 1.5 to 3 mm.

25. The method of Claim 23, wherein each of said two sheets of glass has a core compressive stress in the central zone ranging from of at least 20 MPa.

26. The method of Claim 12, wherein said anti-laceration glazing comprises at least one functional layer.

27. The method of Claim 12, wherein the outer faces of the anti-laceration glazing comprises a plastic sheet.

28. An anti-laceration glazing produced by the method of Claim 12.

29. An automobile comprising the anti-laceration glazing of Claim 28.--

REMARKS

Claims 12-29 are active in the present application. The claims are amended for clarity and to remove multiple dependencies. Support for Claims 12-29 is in Claim 1-11 and the specification as originally filed. No new matter has been added. Applicants submit that the present application is now in condition for examination on the merits. Early notification of such is earnestly solicited.

Respectfully submitted,  
OBLON, SPIVAK, McCLELLAND,  
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ANTI-LACERATION GLAZING

The invention belongs to the area of glazing and, in particular, relates to the protection of individuals who happen to be close to glazing when same is shattered.

In the case of the automobile, considerable efforts have been made to date to adapt the structure of glazings and the nature of their component materials from a point of view of protection of the occupants. For this purpose, various types of accidents likely to occur formed the subject of simulations.

One of the problems which could be clearly identified relates to tempered monolithic glazings, widely used as side glazings, in particular vertically movable. In the event of impact due to a collision, a rollover, etc., this type of glazing shatters into a thousand fragments, completely clearing the window opening. It has been learned that the ejection of the occupants through this opening constitutes one of the most critical risks because of its frequency and the severity of its consequences, in particular the crushing of the occupant by the body of the vehicle.

With a concern for improving safety conditions, one of the means consisted in replacing the tempered monolithic glazings, with thicknesses generally at least equal to 3 mm, with laminated glazings composed of two sheets of glass more or less tempered or merely annealed, with thicknesses ranging between approximately 1 and 3 mm, sandwiching an intercalary adhesive, generally a layer of polyvinylbutyral (PVB) of 0.76 mm in thickness. Such a glazing, when it shatters, is likely to remain in place in the window opening; nonetheless, the slivers of glass, which retain their adhesion to the PVB, constitute a source of laceration, in particular at the level of the faces of the occupants.

The thrusting in of the glazing toward the passenger compartment deriving, in particular, sometimes from the bending of the components of the vehicle body or of the frame which contains the glazing constitutes, in this connection, quite understandably, a circumstance all the more aggravating when it occurs with formation of sections of the glazing into more acute angles penetrating into the passenger compartment. As a matter of fact, certain slivers of shattered glass located close to such relatively acute angles display sharp edges directed toward the occupants. Quite obviously, it is sought to minimize as much as possible the laceration affecting the faces of the occupants.

There are known, on the other hand, numerous burglarproof and/or bulletproof and/or shatterproof glazings, comprising at least three sheets of glass bound by various intercalations such as PVB, polyurethane (PU) of thicknesses in excess of 0.76 mm.

In the context of the use of a glass-adhesive-glass laminate as a side automobile glazing cited previously, patent application EP 0 418 123 A1 describes the improvement of the acoustical abatement properties, obtained through use of an appropriate intercalation of 0,8 to 2.0 mm in thickness. This intercalation is a vinyl chloride-glycidyl methacrylate copolymer; certain thermoplastic PU also may be suitable, PVB, on the contrary, being avoided.

Patent application EP 0 816 064 A1 relates to the lightening of the same type of glazing with retention of satisfactory mechanical properties, particularly in deflective strength. The use of thin sheets of glass, with thicknesses approximately equal to 0.5 mm, is made possible by the utilization of special, relatively hard intercalations, having a Young's modulus at least equal to 20 MPa, such as an ionomer resin, certain polyurethanes, certain polyesters, poly(ethylene terephthalate), certain acrylic resins.

In an unexpected manner, the inventors became aware that the increase in the thickness of the intercalary adhesive has the effect of reducing the extent of the laceration



phenomenon, in particular in the circumstances previously cited.

Consequently, the invention has as its subject the use of a laminated glazing composed essentially of two sheets of glass bound by means of an intercalary adhesive layer with a thickness in excess of 0.76 mm as an anti-laceration glazing, in particular for automobiles and transport vehicles.

In conformity with the invention, the anti-laceration property is evaluated on mannequins in accordance with tests described in the publication "Pickard J., Brereton P., Hewson A.: An objective method of assessing laceration damage to simulated facial tissues - The Triplex Laceration Index - Proceeding of 17th Conference - American Association of Automotive Medicine 1973 - Pages 148-165." This publication defines a laceration measurement scale between 0 and approximately 13 in practice, or even higher, observed on a vinyl mannequin head covered with two gauged leathers. The more numerous and deep the scratches, tearing and other damage to the two leathers and to the vinyl at the conclusion of the test, the higher the parameter obtained, called TLI (for Triplex Laceration Index).

In addition, there has been observed, as a secondary benefit obtained through the invention, an anti-laceration effect with respect to the air bags installed in the passenger compartment. This effect is manifested by a reduction in the bursting of air bags during accidents and, finally, by a better efficacy in their functioning.

According to a preferred variant of the invention, the glazing is used as an anti-laceration glazing in the non-intact state or, in other words, as a glazing affording anti-laceration properties with respect to an occupant or a mannequin striking against it when it already is shattered. It is easily understood that the laceration is far more severe under these conditions than when the occupant strikes against an intact glazing surface which breaks up only afterwards.

A second variant of the invention, preferred over the preceding one, corresponds to still more exacting conditions for measurement of the anti-laceration property. It concerns the use of a laminated glazing described above as a glazing having anti-laceration properties in the non-intact, bent state. This variant relates in particular to the case of glazings mounted, in the context of experimentation, in a frame articulated along at least one axis; in the case of impact originating from the exterior of the vehicle, a frame of this type sustains an angular deformation up to a minimal predetermined angle, scarcely less than  $180^\circ$ , bringing about the thrusting in of the glazing over a short distance into the passenger compartment.

Along the axis of articulation, the glazing has a U-shaped rounded top or a V-shaped edge, as the case may be. When the glazing is shattered, the more their edges are directed with a certain angle incident on the occupants, the more dangerous the fragments of glass located near the axis of articulation.

By "anti-laceration glazing" in the sense of the invention there is designated a glazing with appreciably improved anti-laceration properties in comparison with those of a conventional laminate, in particular a side automobile glazing the TLI of which, measured under extremely rigorous circumstances, such as on a non-intact, bent glazing, does not exceed 7, and particularly preferably, 6.

The thickness of the adhesive intercalary layer advantageously does not exceed 2 mm, or indeed 1.90 mm or even 1.53 mm. As a matter of fact, the increase in this thickness to higher values does not obtain a significant improvement in the anti-laceration effect, but results principally in a weighing down and a rise in price of the glazing.

Any plastic customarily used as an adhesive between two sheets of glass may be adopted for forming the intercalation, its being understood that the total thickness of the intercalary layer is in excess of 0.76 mm. Well suited for this purpose are

polyvinylbutyral, polyurethane, in particular thermoplastic polyurethane, RIM polyurethane, polycarbonate, poly(methyl methacrylate), polypropylene, ethylene/vinyl acetate copolymer, cycloolefinic copolymer, polyethylene, in particular in the form of an ionomer resin such as a (meth)acrylic acid and ethylene copolymer, neutralized with a polyamine, thermoplastic polyester, in particular poly(ethylene terephthalate), heat-hardening unsaturated polyester, acrylic resin possibly modified, vinyl chloride/glycidyl methacrylate copolymer. The intercalary adhesive layer may be formed of a single layer based on one of these plastics, combined with the customary additives, in particular plasticizers in variable proportions. Standard PVB, as well as the "acoustical" grade thereof, are entirely suitable, as are other compositions having excellent acoustical abatement properties, such as described in application EP 0 418 123 A1. According to an alternative, the intercalary adhesive layer is composed of a stack with a thickness in excess of 0.76 mm of several layers such as have just been defined. Stacks having acoustical abatement properties composed, for example, of one layer of PVB or other material appropriate for this invention and one layer of an acoustical resin separated by a barrier film of poly(ethylene terephthalate), as described in the patent application EP 0 763 420 A1, the content of which is incorporated herein by way of reference, are particularly suitable.

Each of the two sheets of glass of the glazing advantageously has a thickness ranging between 0.1 and 3 mm, in particular at least equal to 1.5 mm, and possesses a core compressive stress in the central zone ranging between 1 and 50 MPa, advantageously at least equal to 20 MPa. The glass used is float glass, more or less tempered; that is, from the fully tempered to merely annealed state and, preferably, semi-tempered.

According to a preferred embodiment, the invention also relates to the use of a laminated glazing comprising at least one functional layer. This may consist of one of the layers or sheets described above, obtained through the incorporation of the sought

function into this layer or this sheet, the composition of which is selected in a manner suited to this purpose. It also may relate to a more or less thin layer or a film intercalated between a sheet of glass and the intercalary adhesive layer or between two layers forming this intercalary adhesive, or even a functional layer or film directly in contact with the surrounding air, whether that of the outdoors or that of the passenger compartment.

A functional layer may consist of a hydrophobic/oleophobic layer, grafted in the form of a thin layer with a thickness ranging between 2 and 50 nm on the outer surface of a sheet of glass, or self-supported on a plastic film such as a poly(vinyl fluoride) (PVF) or poly(vinylidene fluoride) (PDVF) applied on the outer surface of the sheet of glass.

The functional layer also comprises a decorative and/or concealing layer, covering all or a portion of the surface of the laminated glazing.

This layer, for example, may replace the serigraphed decoration frequently deposited on the periphery of the inner face of glazings, in particular for automotive vehicles, for the purpose of concealing, for an observer located outside the vehicle, the vehicle-body elements forming the frame of the window opening and the line of glue which thus is protected from deterioration through ultraviolet radiation. It may comprise opaque or transparent colored decorative elements, making it possible to achieve tinted elements matching the vehicle body or the interior outfitting, logos, etc.

As other examples of functional layers, there may be cited optically selective layers, composed of stacks of layers which are distinguished by a high transmission in the visible spectrum (wavelengths of 400 to 800 nm) and a high absorption and/or reflection in the ultraviolet ( $< 400$  nm) and infrared ( $> 800$  nm) spectrum. These layers may consist of thin metal layers, for example silver-based, with thicknesses ranging between 2 and 35 nm, separated between themselves as well as from other adjacent layers or films by dielectric layers of indium, tin, silicon, zinc, titanium, tungsten, tantalum, niobium, aluminum,

zirconium, etc. oxides or nitrides, with thicknesses generally ranging between 10 and 150 nm. These layers may comprise at least one tinted layer in the whole.

The entirety of these layers may be a conductor of electricity; it may belong to the family of antisolar stacks, used to limit the conveyance of heat through solar radiation into closed spaces, or to that of low-emissive stacks used, on the contrary, to limit the loss of heat in closed spaces, due principally to a transmission of infrared radiation through the glazing. Such stacks are described in the patents FR 2 708 926 and EP 0 678 484.

The functional layers are formed in known manner through application of liquid precursors, according to conventional techniques of flow-coating, dipping, liquid spraying or curtain, by pyrolysis or by evaporation according to techniques such as CVD (Chemical Vapor Deposition), plasma, possibly under vacuum. The decorative and concealing layer or layers is/are provided on support films, in particular made of plastic, according to techniques used in printing: serigraphy, flexography, ink jet, laser printing.

The formation of optically selective stacks makes use of successive depositions by cathodic spraying, in particular aided by a magnetic field or the like. In this connection, reference again is made to the patents FR 2 708 926 and EP 0 678 484.

The formation of functional layers is achieved possibly with application of a heating and/or a radiation, in particular ultraviolet, according to polymerization, sol-gel, crosslinking, etc. processes.

According to a particularly advantageous embodiment, the laminated glazing comprises a plastic sheet on at least one of its outer faces. It very particularly concerns a sheet having anti-laceration properties and, possibly, self-repairing properties arranged on the glazing face directed toward the passenger compartment of the vehicle or the interior of the building. Such a plastic sheet comprises, for example, a layer of thermoplastic polyurethane used for adhesion with respect to the sheet of glass, and a layer of heat-

hardening polyurethane on the outside; that is, in direct contact with the atmosphere of the passenger compartment or the building interior; it is described in patent FR 2 398 606, incorporated herein by way of reference, and improves the anti-laceration properties of the glazing.

Use according to the invention is directed very particularly toward automobile glazing and, preferably, any side automobile glazing which is fixed or movable, for example vertically. A use as a windshield and rear window may be considered as constituting part of this invention by analogy, although the technical problems which it resolves and, in particular, the definition of the TLI below, relate exclusively to side automobile glazings; in the same way, a use as glazing for a building likewise is within the scope of the invention.

The noteworthy effect of the increase in thickness of the intercalation on the anti-laceration properties now is illustrated by the following examples.

#### EXAMPLE 1

The TLI (Triplex Laceration Index), as defined above, is measured on side automobile glazings composed of two sheets of float glass 2.1 mm in thickness, sandwiching a PVB intercalation of variable thickness. One of the glass sheets is merely annealed; that is, it has not been subjected to any tempering; the other has been partially tempered, to a degree corresponding to a surface stress of  $45 \pm 10$  MPa, which is equivalent to a core compressive stress in the central zone approximately equal to  $22 \pm 5$  MPa.

The measurement is made on a mannequin which strikes against the broken glazing mounted in an articulated frame having sustained an angular deformation corresponding to a thrusting in of the glazing 75 mm into the passenger compartment at the level of the axis of articulation.

The glazing has a length of 600 mm and a width of 450 mm.

The TLI measured is recorded in the following table for each thickness of PVB and type of glass used.

Thickness of PVB	Partially tempered glass	Annealed glass
0.38 mm	7.8	7.4
	6.9	9.7
	7.4	11.2
0.76 mm	5.8	6.9
	5.1	5.5
	5.7	7.4
1.14 mm	6.0	8.1
	5.2	7.2
	5.7	5.5
1.52 mm	4.5	4.7
	4.8	5.2
	4.9	5.7

For each type of glass, a linear interpolation of the TLI measurements in terms of the PVB thickness is performed and shown on the sole figure to which reference is made. The effect of improvement in the anti-laceration properties, in the case of broken, bent glazing, obtained through an increase in the thickness of the intercalary PVB, is clearly visible.

Under the same conditions, the TLI was measured on three side automobile glazings composed of two sheets of float glass 1.1 mm in thickness, slightly hardened, that is, having been subjected to a mild tempering, adhering to one another by means of an intercalation 2 mm in thickness. An acrylic acid and ethylene copolymer neutralized with a polyamine is selected as an intercalation. The TLI obtained are 3.8; 3.9; 4.1, corresponding to a noteworthy level of anti-laceration properties.

### CLAIMS

1. Use of a laminated glazing composed essentially of two sheets of glass bound by means of an intercalary adhesive layer with a thickness in excess of 0.76 mm as an anti-laceration glazing.
2. Use of a laminated glazing according to claim 1 as a glazing having anti-laceration properties in the non-intact state.
3. Use of a laminated glazing according to claim 2 as a glazing having anti-laceration properties in the non-intact, bent state.
4. Use according to one of claims 1 to 3, **characterized in that** the thickness of the intercalary adhesive layer is at most equal to 2 mm, preferably to 1.90 mm, in particular 1.53 mm.
5. Use according to one of claims 1 to 4, **characterized in that** the intercalary adhesive layer is composed of one or several layers of plastics chosen from among polyvinylbutyral, polyurethane, in particular thermoplastic polyurethane, RIM polyurethane, polycarbonate, poly(methyl methacrylate), polypropylene, ethylene/vinyl acetate copolymer, cycloolefinic copolymer, polyethylene, in particular in the form of an ionomer resin such as a (meth)acrylic acid and ethylene copolymer, neutralized with a polyamine, thermoplastic polyester, in particular poly(ethylene terephthalate), unsaturated heat-hardening polyester, acrylic resin possibly modified, vinyl chloride/glycidyl methacrylate copolymer.
6. Use according to one of claims 1 to 5, **characterized in that** each of the two sheets of glass has a thickness ranging between 0.1 and 3 mm, preferably between 1.5 and 3 mm, and possesses a core compressive stress in the central zone ranging between 1 and 50 MPa.
7. Use according to claim 6, **characterized in that** each of the two sheets of glass possesses a core compressive stress in the central zone at least equal to 20 MPa.
8. Use according to one of claims 1 to 7, **characterized in that** the laminated glazing comprises at least one functional layer.





## Abstract

The invention concerns the use of a laminated glazing consisting of two glass sheets linked via an adhesive coating insert more than 0.76 mm thick, as anti-laceration glazing.

The graph shows the transmittance (T) of PVB glass as a function of its thickness (mm). The y-axis represents Transmittance (T) from 0 to 10, and the x-axis represents Thickness of PVB (mm) from 0 to 2. Two lines are plotted: one for annealed glass and one for partially tempered glass. Both lines show a linear decrease in transmittance with increasing thickness, with the partially tempered glass having a steeper slope.

Thickness of PVB (mm)	Transmittance (T) - Annealed glass	Transmittance (T) - Partially tempered glass
0	10.0	10.0
0.5	8.5	7.5
1.0	7.0	5.0
1.5	5.5	2.5
2.0	4.0	0.0

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# Declaration and Power of Attorney for Patent Application

## Déclaration et Pouvoirs pour Demande de Brevet

### French Language Declaration

En tant l'inventeur nommé ci-après, je déclare par le présent acte que

As a below named inventor, I hereby declare that:

Mon domicile, mon adresse postale et ma nationalité sont ceux figurant ci-dessous à côté de mon nom

My residence, post office address and citizenship are as stated next to my name

Je crois être le premier inventeur original et unique (si un seul nom est mentionné ci-dessous), ou l'un des premiers co-inventeurs originaux (si plusieurs noms sont mentionnés ci-dessous) de l'objet revendiqué, pour lequel une demande de brevet a été déposée concernant l'invention intitulée

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

ANTI-LACERATION GLAZING ✓

et dont la description est fournie ci-joint à moins

the specification of which

☐ ci-joint

☐ is attached hereto.

☐ a été déposée le \_\_\_\_\_

☒ was filed on August 23, 2000 ✓

sous le numéro de demande des Etats-Unis ou le numéro de demande international PCT

as United States Application Number or PCT International Application Number

\_\_\_\_\_ et modifiée le

09/622,044 ✓ and was amended on

\_\_\_\_\_ (le cas échéant)

\_\_\_\_\_ (if applicable).

Je déclare par le présent acte avoir passé en revue et compris le contenu de la description ci-dessus, revendications comprises, telles que modifiées par toute modification dont il aura été fait référence ci-dessus.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

Je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

## French Language Declaration

Je revendique par le présent acte avoir la priorité étrangère, en vertu du Titre 35, § 119(a)-(d) ou § 365(b) du Code des Etats-Unis, sur toute demande étrangère de brevet ou certificat d'inventeur ou, en vertu du Titre 35, § 365(a) du même Code, sur toute demande internationale PCT désignant au moins un pays autre que les Etats-Unis et figurant ci-dessous et, en cochant la case, j'ai aussi indiqué ci-dessous toute demande étrangère de brevet, tout certificat d'inventeur ou toute demande internationale PCT ayant une date de dépôt précédant celle de la demande à propos de laquelle une priorité est revendiquée

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below, and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed

Prior Foreign Application(s)  
Demande(s) de brevet antérieure(s) dans un autre pays

Priority claimed  
Droit de priorité  
revendiqué

98/02136 ✓ FRANCE ✓  
(Number) (Country)  
(Numéro) (Pays)

23 February 1998 ✓  
(Day/Month/Year Filed)  
(Jour/Mois/Année de dépôt)

☒ ☐  
Yes No  
Oui Non

•                                            
(Number) (Country)  
(Numéro) (Pays)

                      
(Day/Month/Year Filed)  
(Jour/Mois/Année de dépôt)

☐ ☐  
Yes No  
Oui Non

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 119(e) du Code des Etats-Unis, de toute demande de brevet provisoire effectuée aux Etats-Unis et figurant ci-dessous.

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below

                      
(Application No.)  
(N° de demande)

                      
(Filing Date)  
(Date de dépôt)

                      
(Application No.)  
(N° de demande)

                      
(Filing Date)  
(Date de dépôt)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 120 du Code des Etats-Unis, de toute demande de brevet effectuée aux Etats-Unis, ou en vertu du Titre 35, § 365(c) du même Code, de toute demande internationale PCT désignant les Etats-Unis et figurant ci-dessous et, dans la mesure où l'objet de chacune des revendications de cette demande de brevet n'est pas divulgué dans la demande antérieure américaine ou internationale PCT, en vertu des dispositions du premier paragraphe du Titre 35, § 112 du Code des Etats-Unis, je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1 56 du Code fédéral des réglementations, dont j'ai pu disposer entre la date de dépôt de la demande antérieure et la date de dépôt de la demande nationale ou internationale PCT de la présente demande.

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1 56 which became available between the filing date of the prior application and the national or PCT International filing date of this application

PCT/FR99/00395 ✓  
(Application No.)  
(N° de demande)

22 February 1999 ✓  
(Filing Date)  
(Date de dépôt)

                      
(Status) (patented, pending, abandoned)  
(Statut) (breveté, en cours d'examen, abandonné)

                      
(Application No.)  
(N° de demande)

                      
(Filing Date)  
(Date de dépôt)

                      
(Status) (patented, pending, abandoned)  
(Statut) (breveté, en cours d'examen, abandonné)

Je déclare par le présent acte que toute déclaration ci-incluse est, à ma connaissance, véridique et que toute déclaration formulée à partir de renseignements ou de suppositions est tenue pour véridique, et de plus, que toutes ces déclarations ont été formulées en sachant que toute fausse déclaration volontaire ou son équivalent est passible d'une amende ou d'une incarcération, ou des deux, en vertu de la Section 1001 du Titre 18 du Code des Etats-Unis, et que de telles déclarations volontairement fausses risquent de compromettre la validité de la demande de brevet ou du brevet délivré à partir de celle-ci.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon

## French Language Declaration

**POUVOIRS:** En tant que l'inventeur cité, je désigne par la présente l'(les) avocat(s) et/ou agent(s) suivant(s) pour qu'ils poursuive(nt) la procédure de cette demande de brevet et traite(nt) toute affaire s'y rapportant avec l'Office des brevets et des marques (mentionner le nom et le numéro d'enregistrement)

**POWER OF ATTORNEY:** As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

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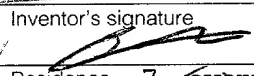
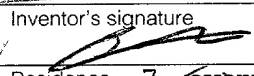
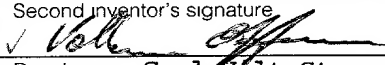
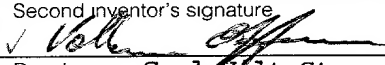
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Nom complete de l'unique ou premier inventeur	Full name of sole or first inventor
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(Supply similar information and signature for third and subsequent joint inventors)